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# Analysis of Formalization Approaches in the Artisanal and Small-Scale Gold Mining Sector Based on Experiences in Ecuador, Mongolia, Peru, Tanzania and Uganda

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**UNITED NATIONS  
ENVIRONMENT PROGRAMME**



**Analysis of formalization approaches in the artisanal and  
small-scale gold mining sector based on experiences in  
Ecuador, Mongolia, Peru, Tanzania and Uganda**

**United Nations Environment Programme  
Division of Technology, Industry and Economics (DTIE)  
Chemicals Branch,  
Geneva, Switzerland,  
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UNEP would like to thank the Government of Norway for their contribution to this work. This summary was based on reports produced by the Alliance for Responsible Mining (ARM), under the leadership of Maria Laura Barreto of the Materials Efficiency Research Group (MERG). Background material can be found at the following link: [www.communitymining.org](http://www.communitymining.org).

Five case studies were developed as a means to inform the formalization analysis. The case studies are available on UNEP's web-site and were developed by the following regional experts:

- Ecuador – Maria Laura Barreto, ARM/MERG
- Mongolia – Patience Singo, Sustainable Artisanal Mining project (SAM project)
- Peru – Olinda Orozco Zevallos and Frederico Cesar Gamarra Chilmaza, Red Social (Peru)
- Tanzania – Samuel Spiegel, Independent Consultant
- Uganda – Jennifer Hinton, Independent Consultant

The case studies represent the views of the identified expert author. The case studies do not imply any expression of any opinion whatsoever on the part of UNEP or the country studied.

**Editorial Assistance**

Louise Gallagher (UNEP), Carol Kavanagh and Alan Young (MERG)

**Members of the Steering Group**

Ludovic Bernaudat (United Nations Industrial Development Organization, Co-chair of the UNEP Global Mercury Partnership Area on ASGM)

Susan Keane (Natural Resources Defense Council, Co-chair of the UNEP Global Mercury Partnership Area on ASGM)

Patrick Schein (Alliance for Responsible Mining – ARM)

Samuel Spiegel (Independent Consultant)

Maria Laura Barreto (Project Coordinator, ARM/MERG)

Brenda Koekkoek, Louise Gallagher and Usman Tariq (UNEP)

**Review Process**

An earlier version of this document was released for public comment in October 2011 on UNEP's web-site. Comments received during this period were taken into account in this document.

UNEP expresses its appreciation to those who contributed to this study.

**Note**

This report is one of a series of documents that aim to improve understanding of the complex phenomenon of ASGM. UNEP, in collaboration with its partners, has developed reports on:

- Reducing Mercury Use in Artisanal and Small-Scale Gold Mining: A Practical Guide.
- UNEP Guidance Document: Developing a National Strategic Plan to Reduce Mercury Use in Artisanal and Small Scale Gold Mining.
- Environment for Development Perspectives: Mercury Use in Artisanal and Small Scale Gold mining.

These documents can be found on UNEP's website:

<http://www.unep.org/hazardoussubstances/Mercury/PrioritiesforAction/ArtisanalandSmallScaleGoldMining/Reports/tabid/4489/language/en-US/Default.aspx>

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## I. Introduction

This analysis document is developed for policymakers and other interested stakeholders on formalization of the artisanal and small-scale gold mining (ASGM) sector. It is based on the analysis of the case studies developed by international experts for Ecuador, Peru, Tanzania, Uganda and Mongolia and also draws upon examples from other countries.<sup>i</sup>

Formalization is a process that seeks to integrate ASGM into the formal economy. The process of formalization includes the development or adaptation of mining (and other) laws or policies to address the challenges of ASGM. There is growing official recognition that ASGM is an activity that can make a significant contribution to poverty alleviation but that it needs support to overcome associated social and environmental challenges.<sup>ii</sup>

In the last 20 years, ASGM has grown to become a major source of employment in many developing countries. Conservative estimates suggest that there are 10-15 million miners<sup>iii</sup> operating in the artisanal and small-scale gold sector in 70 countries around the world. Overall, ASGM is perceived as a positive development opportunity in some countries on the basis of historic experience on North America's West Coast, Australia and South Africa. People engage in ASGM because there is a sustained market for gold and also because initial capital investment and operational costs are low. It can also be flexibly combined with other economic activities and provides viable options for employment.

While formalization of the sector remains a significant challenge, the lack of formalization in ASGM is widely considered a barrier for miners to implement changes. In particular, the lack of access to formal credit markets as a result of the informal (and sometimes illegal) nature of the sector is a barrier for miners to implement changes. Miners require access to capital for better equipment that allows the use of these alternative processes and can increase efficiency and profits, and formalization tends to foster positive economic conditions for miners and local communities.

The goal of this document is to highlight critical elements of formalization processes, including legislation development or reform, institutional considerations and financing. The analysis identifies key strategic lessons and recommendations that inform the debate and may be applicable in other countries.

The main findings include:

- Environmental and other legislation relevant to mining needs to take into consideration potential concerns specific to ASGM;
- Existing mining codes in the countries studied are, for the most part, ill-adapted for the task of formalizing ASGM but can be successfully adjusted;
- It is critically important for stakeholders, in particular mining groups, to be positively engaged in planning and reforms to lead to the desired outcomes of formalization;
- Better access to credit and markets for miners should be one desired outcome of formalization;
- Early phase financing is a crucial gap in preliminary formalization processes; and
- Experience shows that the ASGM sector can transform itself quickly when the enabling regulatory, economic and other conditions are created.

In order to foster positive change, it is also crucial to recognize the negative impacts that ASGM contributes to the economy. The case studies illustrate that ASGM can generate positive financial gains for the livelihoods of miners and increased wealth in local economies, but it can also generate negative consequences in the form of environmental damage as well as social and health impacts of local to global dimensions, with particular impact on vulnerable groups (the elderly, women and children). In addition, there are often ongoing problems with exploitation and poor working conditions, child labour, general lack of social security and relationships with organized crime.

Mercury contamination is perhaps the most widely known contributing factor to environmental and health problems affecting miners, surrounding communities and ecosystems. While the negotiation of the global legally binding instrument on mercury is drawing increased attention to this important aspect of the ASGM issue, the overall complexity of the ASGM issue calls for a fresh, integrated and holistic approach to formalize the sector and to address its critical needs.

## II. Formalization as a process

*Formalization is a process that seeks to integrate ASGM into the formal economy.*

*The process of formalization includes the development or adaptation of mining (and other) laws or policies to address the challenges of ASGM. A well-designed formalization process generates the enabling conditions for accountability within the sector so that it can ultimately be integrated into the formal economy.*

*Formalization can only be successfully achieved if programmes and public policy deal with the different dimensions of ASGM activities simultaneously and in an integrated way.*

*Legalization is just one dimension of the process of formalization.*

Worldwide, mining tends to be regulated through attribution of mining title rights and associated land access rights for land on which mining takes place.

It is important for all stakeholders, especially ASGM groups, to be positively engaged in formalization planning, including legislative development reforms, to lead to the desired goals of the formalization process.

Overall, it is believed that formalization is a key factor in promoting mercury reduction and management as well as minimizing other social and wider environmental problems in ASGM communities. Policies and actions that lead to formalization of this sector, though challenging, will be well rewarded through avoiding significant health and environmental consequences in addition to avoiding related financial costs.<sup>iv</sup>

For the most part, ASGM activities are not incorporated into formal legal and institutional structures because the sector is generally considered more complicated to regulate than larger-scale mining operations and governments lack the capacity, resources or will to formalize it. Where ASGM is formally recognized as is the case for the five countries analysed, institutions and laws are typically not well adapted for ASGM.

This document provides an analysis of three main areas related to formalization in the following sections: (i) legal frameworks, (ii) institutional aspects, and (iii) financing of sustainable solutions.

## III. Legal frameworks

The development of legal frameworks for ASGM is still in its early stages, and there is space for the development of additional comprehensive, integrated and realistic approaches. Legislators typically face one of three tasks:

1. Development of new legislation specifically relevant to ASGM within mining codes, environmental, health and safety, trade, tax and other legislations, in cases where the sector is *extra-legal* (neither currently governed by law nor considered illegal).
2. Reform of existing legislation and development of new legislation specifically relevant to ASGM within mining codes, environmental, health and safety, trade, tax and other legislations, in cases where ASGM is *illegal*.
3. Reform of existing legislation specific to ASGM, in cases where current law and regulation does not address the particularities of ASGM appropriately.

In developing legal frameworks, coherency is needed between ASGM-related legislation and other relevant laws and regulations (such as environmental management, labour, child protection, trade, and tax). Most countries seeking to govern mining better have created a unique framework law distinct from this other related legislation. However, attempts to harmonize various requirements in existing laws and regulations at the different levels (national, provincial and local level) have been weak.

Legislators have at their disposal a number of policy instruments to implement effective governance of mining activities. The most commonly used policy instruments are regulatory ('command and control'), but these are generally applied in combination with other measures, including economic instruments (market-based instruments), enforcement mechanisms and sanctions for non-compliance. These measures must be simplified and adapted for ASGM miners.<sup>v</sup>

Whatever the choice, approaches must be appropriate for and adapted to the national and local context. The following sub-sections review important policy concepts related to legal frameworks, including defining ASGM activities; mining titles; environmental licences; pollution control, bans and restrictions and safety measures; as well as rehabilitation and mine closure.

### **A. Definition of ASGM activities**

A definition is fundamental in distinguishing ASGM from other mining activities. While challenging, legally recognising the many different types of ASGM that exist is an important tool in deciding how to address the activity and for adapting regulations to appropriate levels of control for different types of activity.

Ultimately, the appropriate definition is best decided at the national level, in close collaboration with local stakeholders and regional authorities in ASGM areas and with some level of coordination with internationally agreed norms.

#### **Box 1. Classifying ASGM Activities**

1. “Artisanal”, “family”, “micro”, “small”, and “medium” are five categories of classification in use. Only two categories are commonly in use, “artisanal” and “small”.
2. There is scope for developing a more accurate classification system that corresponds to the diversity of ASGM at the national level.
3. Consideration of pre-existing legislation is critical for the definition of the scope of new/reformed legislation and to avoid gaps, overlaps and duplication in the overall legal framework governing mining practices.

Peru, Tanzania and Ecuador have developed different definitions for ‘small’ and ‘artisanal’ mining to differentiate between the two types of activities and to develop specific policies for them. For example in Peru, the ‘small’ and ‘artisanal’ gold mining sector does not pay royalties. In Ecuador, small gold mining pays royalties but artisanal does not. In this case, the differentiation is motivated by the fact that ‘artisanal’ gold mining is considered a subsistence activity with less ability to pay taxes.

### **B. Mining titles and related obligations and rights**

The mining title defines the rights and obligations of the title holder. It is the primary legal requirement for undertaking any mining activity and is considered to be the main legal instrument used to regulate mining, providing the right to mine legally. The title places responsibility on the title holders for the mining activities in the area.

In essence, the mining title is a policy tool that can be used to promote better practices (including reduced mercury use), improve working conditions for miners as well as reduce overall environmental impacts at the local level.

#### **Box 2: Key strategies and approaches in developing mining titles and related obligations**

In designing mining titles, it is important to consider how to:

1. Balance rights and responsibilities in mining titles according to the size of the operation and its classification<sup>vi</sup>;
2. Adjust mining title regimes to fit ASGM conditions and not just medium and large-scale operations;
3. Attribute mining titles with a specific area to the title holder, as opposed to a generalized right to operate;
4. Avoid designating broader reserve areas for community mining (costs related to geological exploration that are necessary to ensure adequacy of the deposit area are too burdensome for governments);<sup>1</sup>
5. Simplify licensing procedures and keep cost to comply low for ASGM operations.

<sup>1</sup> If designated areas or reserves are considered, they must include special community rights of use of territory and be exclusive for ASM activities in order to avoid competition with large scale mining.

More than one type of ASGM mining category (as described in section A above) may be necessary to allow regulators to tailor requirements for mining titles to the particular and diverse characteristics of different types of ASGM.

Mining phases include recognition, exploration and planning, mining and concentration, processing, refining (smelting), commercialization and site rehabilitation. In large scale mining, separate licences are often granted for each mining phase, whereas in ASGM, it can be simpler to grant licences for various mining phases together.

An important consideration in the design of mining legislation for ASGM is how to link each mining phase to a specific license. For most ASGM operations, the exploration, mining and concentration phases occur simultaneously with processing. It is possible, perhaps even desirable from a simplification standpoint, that ASGM mining titles allow the recognition, mining and concentration, processing and commercialization in a single licence, except when (1) a processing plant is involved that reaches a specific size of mining area or production capacity, (2) processing and commercialization is a business independent of any mining extraction activities.

### **Box 3: Considerations for Designing Mining Titles or Licences for ASGM**

**Criteria for defining ASGM:** The recommendation is to establish two main criteria in order for a mining project to be entitled to an artisanal or small-scale mining title, including: (i) maximum area that may be covered and (ii) maximum extraction capacity. Sometimes other criteria are also applied, such as the maximum amount that can be invested and the technology that is permitted, but these can impose counterproductive restrictions.

**Duration and renewal of the title:** Licences that have a long duration help ensure stability of the mining because they allow miners to operate with a longer term perspective in mind – promoting a willingness to invest in the mining operation and improving options to access to credit. This can be used as an incentive by government in its function to promote best practices in extraction of mineral resources. In addition, facilitated renewal of mining titles allows mining operators to invest and continue work in an area until the deposits “ends”.

**Transfer and upgrade of titles:** The ability to transfer mining rights and upgrade mining titles provides necessary business flexibility to miners and again can be applied as an incentive by government in its function to promote best practices in extraction of mineral resources.

**Types of entities allowed to operate under an ASGM mining title:** Titles or licences should allow artisanal and small-scale miners to be organized into cooperatives and other legal entities. Organized operations have broader capacity to support social and economic benefits for the miners and the community. Whereas ASGM activities conducted by individuals generally only provide subsistence income. As a result, Governments may wish to promote organized cooperatives and other legal entities through the title and licencing system, where appropriate and relevant.

**Environmental considerations:** Obtaining an environmental licence is generally part of the process of obtaining a mining title for ASGM. Environmental licences should aim to create the enabling conditions for both environmental protection and economic development of the ASGM sector and are described separately in the next section.

**Safety:** Safety considerations are usually described in a general law. It is, however, recommended to design specific safety regulations for ASGM.

## **C. Environmental licence**

Obtaining an environmental licence is generally part of the process of obtaining a mining title for ASGM and may be combined with it. The modalities of environmental licence applications are explained in the Ecuadorian and Peruvian case studies. In each of these countries, the licences are not issued by the Mining Ministry, but rather they are coordinated by either the Ministry of Environment or by the local environmental agency. In Peru where the mining areas are highly regionalized, environmental licences are issued by the Regional Governments.



#### **Box 4. Considerations for Environmental Licences in ASGM**

1. Environmental licences for ASGM should build, to the extent possible, on established environmental legislation and policy instruments. In many cases, licences may need to be adapted to the unique conditions of ASGM.
2. Evaluation of the impacts of ASGM and specific guidelines for addressing the impacts should be required for all categories of ASGM. Given that this is not practical or efficient for individual small-scale miners, the local authority should develop a simple process for the evaluation of environmental impacts and a management plan for the designated ASGM mining and processing area, given that it is to deliver these independently.
3. Environmental requirements should be simplified to the extent possible (e.g., Environmental Impact Assessments and management plans based on the size of the operation) without reducing the quality of environmental management.

#### **D. Pollution control, bans, restriction and safety measures**

Ordinarily, the “polluter pays principle” is applied to industrial operations where the industry is held accountable for cleaning up contamination. However, small scale miners will have limited resources in this regard, and the need for prevention (helping miners transition away from mercury use/release in the first place) is especially critical.

Under the UNIDO Global Mercury Project, years of mercury research and experience in the field were consolidated in the document ‘International guidelines on mercury management in small-scale gold mining’<sup>vii</sup>. This is a useful tool for governments to consider in their national context.<sup>2</sup> Furthermore, UNEP has developed ‘A Practical Guide: Reducing Mercury Use in Artisanal and Small-Scale Gold Mining’ as a means to assist policy makers, miners and civil society to improve technologies and approaches.<sup>3</sup>

Although each of the case study countries has guidelines and regulations to safeguard worker health and safety as well as to prevent or minimize environmental and social impacts, there is room for improving effectiveness of guidelines and regulations in each of the countries analysed. Overall, prescriptive and specific measures are necessary to clarify obligations.<sup>viii</sup> The focus should be on ensuring the desired environmental and social outcomes (while avoiding the creation of unwarranted obstacles). Some common pollution control and safety measures are identified in Box 5.

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<sup>2</sup> The UNIDO Technical Guidelines are available at the following link:

<http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/ASGM/UNIDO%20Guidelines%20on%20Mercury%20Management%20April08.pdf>

<sup>3</sup> Available at the following link :

[http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/ASGM/Techdoc/LAST%20VERSION%20UNEP\\_Technical\\_Document\\_DEC\\_31\\_E\[1\].pdf](http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/ASGM/Techdoc/LAST%20VERSION%20UNEP_Technical_Document_DEC_31_E[1].pdf)

### **Box 5. Common Pollution Control, Bans, Restriction and Safety Measures in ASGM**

**Restriction of mining in river beds and environmentally sensitive areas:** Specific mining and environmental regulation, and where appropriate restriction, should apply to small-scale mining in river beds and environmentally sensitive areas to prevent and minimize the environmental impacts.

**Restrictions on technology use:**

(i) Any legal ban or restriction on the use of technology, methods or processes should be evaluated carefully in terms of the impacts of such restrictions on the sector, including the cost of monitoring and enforcement and likely effectiveness of such a ban/restriction.

(ii) Any ban/restriction should be accompanied by accessible alternatives in terms of the performance, cost, availability, and technical complexity in use. Alternatives should likewise be supported through subsidies, promotion, or other means to facilitate the migration of miners to the alternatives.

(iii) Measures to eliminate the practice of whole ore amalgamation (which is widely considered to be one of the worst practices to extract gold given its significant use of mercury) should be incorporated into regulatory guidelines.

**Mercury and cyanide environmental emissions and contamination limits:** Knowledge of the use of mercury and cyanide, and other toxic substances should be incorporated into regulatory guidelines applied to ASGM.

**Explosives:** The regulatory framework should clearly address the requirements for buying, using, and storing explosives in the context of ASGM. Capacity building in explosives use and storage (including safe storage) is very important and should be adapted for ASGM.

Often blanket bans and restrictions, without accompanying support for alternatives or options, have pushed artisanal and small-scale miners into non-compliance with their licences, to locations outside of the practical reach of formal monitoring and enforcement measures, or into illegal trade of toxic inputs or gold. Successful restrictions have been established when they are coupled with assistance and incentive measures to help miners adapt to the restrictions without undermining the profitability of their activity.

#### ***Example: 2008 Mercury Restrictions in Mongolia***

*In Mongolia, the use of mercury was banned in ASGM in 2008. While challenges still remain in implementing the ban, Mongolia has a dedicated programme, Sustainable Artisanal Mining (SAM), to support the ASGM sector to transition away from mercury. The SAM project was established in partnership with the Mineral Resources Authority of Mongolia (now with Ministry of Minerals and Energy) and the Swiss Agency for Development and Cooperation (SDC).*

*With the support of this ambitious program, the country has been successful in the process of formalization. Straight-forward small scale mining regulations were developed with the engagement of multiple stakeholders at local, regional and national levels.*

*One of the major achievements of the project, in partnership with the government, has been to help develop a processing plant that does not use any mercury or cyanide in the recovery process. This demonstration plant allows the miners to custom mill their ore, preserving the individualistic nature of small scale mining. The project is currently in its third phase and will run until 2014.*

### **E. Rehabilitation and mine closure**

It is also important that formalization acknowledges the requirement for miners to be accountable for the legacy of their activities at the end of the title. Thus, rehabilitation of mines and decontamination of specified areas needs to be considered.

Rehabilitation at mine closure is a relatively new area for mining in general and for ASGM in particular. Generally, obligations, where they exist, are not well-implemented.<sup>ix</sup> Regulations are often abstract and tend to default to the process for medium and large-scale mining.

Comprehensive regulatory guidelines should be provided for the end of the mine title that are properly designed for ASGM or community mining areas. This will allow permit holders to understand the rehabilitation requirements and mine closure guidelines as part of their obligations.

An interesting approach to rehabilitation of mining sites has been developed in Ecuador by granting the right to beneficiate, smelt, refine or sell any abandoned mining or metallurgical residues. In this way, small-scale mining operations can deal directly with rehabilitation and recovery and be a self-sustaining component of environmental clean-up and gold recovery projects. In addition, some small-scale Mongolian mining sites have to deposit US \$10,000 to a local rehabilitation fund for environmental management after mining.

#### IV. Institutional aspects of formalization

Four institutional aspects of formalization are examined in this section: (i) responsibility and engagement, (ii) financing, (iii) revenue generation, and (iv) monitoring and enforcement. The key considerations for these institutional aspects are highlighted in Box 6.

##### **Box 6. Considerations for Institutional Aspects of Formalizing ASGM**

**Responsibility:** Formalizing ASGM is a shared responsibility between various stakeholders that needs to be adapted to the national context. It requires the designation of responsibility, the integration of policies and strong coordination between institutions and other stakeholders. Miner's associations, large-scale mining representatives and academia should all be positively engaged if formalization is to be successful.

**Financing:** The earliest phases of financing are likely to be sourced from public budgets at the national level.

**Revenue generation:** Taxation schemes for ASGM need to take into consideration the actual economic capacity of the mining operation to pay the taxes in setting the tax rates.

**Monitoring and Enforcement:** Monitoring and enforcement is an important responsibility of the government in order to ensure that mining operations are abiding by environmental or social requirements.

##### **A. Responsibility and engagement**

Both government and other actors in society have an important role to play in the formalization process, foremost miners' associations as well as large-scale mining and academia. It is especially important for ASGM groups to be positively engaged in formalization planning, including legislative development reforms, to lead to the desired outcomes and avoid corruption. Governments play an important role in coordinating activities.

Laws typically identify a primary authority responsible for supervision and management of the legislation. This facilitates the coordination of activities. For ASGM, the primary authority is typically the ministry of mining or particular provincial or local governments in areas where the mining is taking place. Decentralization of responsibility for ASGM, and the capacity of the local, regional and national government institutions to deal with ASGM, needs to be considered.

Clear allocation of mandates among public bodies is the key to strong and efficient governance.<sup>x</sup> The role of parliament or congress is crucial in issuing mandates at the policy level with a common perspective on ASGM that should be upheld by all ministries involved. Parliamentary mining commissions are potentially powerful mechanisms to help develop a common vision and approach when ministries have fragmented views on the overall approach. They also help to raise awareness of the impacts.

**Example: National Strategic Plan for Mercury Reductions in ASGM**

*An example of engagement of stakeholders across society is the development of multi-stakeholder National Strategic Plans aimed to reduce mercury use in ASGM in Cambodia and the Philippines. In developing these plans in the 2010-2011 timeframe, government commitment to address ASGM was secured, building upon on-going activity to address mercury use and artisanal mining. It was a process that engaged all actors (including miners, local government and NGOs) and has set out objectives and timelines for future actions. Overall collaboration and coordination was enhanced through exchange of experiences and lessons learned on local, national and regional levels. This process was funded through the Strategic Approach to International Chemicals Management (SAICM) Quick Start Programme.<sup>xiv</sup>*

**B. Financing the formalization process**

There is a need to support one-time financing needs for legislation development and early phase activities in formalization processes, including strategic planning, institution and relationship building and gathering baseline information.<sup>xi</sup> The key thrust for early phase financing is (1) increasing national budget allocations for ASGM activities, (2) diverting some or increasing revenues from formal (small and large scale) gold mining royalties and tax receipts to assist the formalization of ASGM sector (3) encouraging large-scale – small-scale partnerships. The following section provides an analysis of revenue generation in ASGM.

**C. Revenue generation - taxation regimes and royalties**

Large-scale mining companies pay royalties to the government in exchange for the financial benefit they accrue in exploiting the mineral resource. In most cases, mining resources are the common property of the state, and the government has the duty to manage these resources.

**i. Taxation regimes**

In terms of taxes in ASGM sector, two tendencies have emerged:

1. ASGM may be treated in a similar way to other economic sectors. In Peru for example, the taxes for ASGM are the same as the other economic sectors and are proportional to the economic capacity of the operations.
2. In other cases, countries have distinguished the ASGM sector from other economic sectors by:
  - a. using regimes similar to taxation of independent workers, such is the case in Mongolia.
  - b. applying royalties and land rent tax. In this case using lower tax rates than for the large scale mining sector. In Ecuador, for example, lower royalty rates are applied to small-scale mining than to large-scale activities as a means to support the inclusion of ASGM into the formal economy

In order to promote the inclusion of ASGM into the formal economy, a combination of the approaches noted above may be helpful, depending upon the situation of the country. Coordination between different government agencies is required with the objective of having a balance in terms of the impacts of cumulative taxes and fees applied for different administrative requirements.

There is often a sense that the regular taxation for other economic sectors is too complex for the ASGM sector and that an excessive tax burden might push artisanal and small scale-miners into illegality. However, there are examples of applied specific taxation schemes for ASGM that take into consideration the actual economic capacity of the mining operation to pay the taxes.

The current tendency is to assign royalty rates as a function of the size of the operation and type of minerals extracted. In the countries examined, royalties for the ASGM sector vary from 0.2% to 5%. In Uganda, holders of Location Licences must pay 3% of the international value as royalties on their gold production.

With the fluctuating market price of gold in mind, Bolivia, in its draft mining law of 2010, has taken an innovative approach by varying the royalty rate according to the market price of gold.

## ii. Fees

The mining licence fee is one of many administrative fees that miners incur with the legalization of a mining project. The amounts charged vary across the countries reviewed, ranging from \$50 to \$350 annually. The general approach is to have lower fees for artisanal mining than for small-scale mining.

Overall it is important to keep this fee at a reasonable level so as to encourage miners to enter into the formal economy.

## iii. Regional harmonization

It is observed that there is a need for regional harmonization of tax and royalty rates, to a certain degree, amongst adjacent countries. It is equally important to keep fees at a reasonable and consistent level across a sub-region. Illegal trade becomes a more attractive prospect when the cost of compliance goes up. This is one of the most important and effective regulatory tools to avoid smuggling.

Table I provides an overview of royalty and mining licence fees for selected countries to provide a general idea of the fees applied in different regions. Although the table is not exhaustive, it does illustrate the variation in the royalties and fees within regions.

<b>Table I: Royalties and Mining Licence Fees by Selected Countries</b>		
<b>Country</b>	<b>Percentage of Royalty</b>	<b>Mining Licence Fees</b>
<b>Africa</b>		
Tanzania	Was 3%. Now 4 %	US\$ 6.3 plus an annual rent of US\$ 63
Uganda	3%	US\$ 340 one year licence or US\$ 450 2 year licence (investment below US\$ 5,000)
Sierra Leone	5% royalty where market value is below US\$ 500,000; 3% royalty for other	US\$ 270 in 2005  US\$ 156 in 2007
Democratic Republic of Congo	2.5% - 10%	US\$ 25 - US\$ 195.40 for a small-scale exploitation permit
Ghana	3 %	Not available
Madagascar	2%	Not available
<b>Latin America</b>		
Brazil	0.2%	US\$ 62
Peru	Not applied	US\$ 0.50/ha - US\$ 1.00/ha annually
Ecuador	3%	Two minimum salaries (US\$ 528)
Guyana	5%	US\$ 5 - US\$ 50
Bolivia	Was 7% Now is 1.5-2.5% depending if it is for internal sale or export	Not available
<b>Asia</b>		
Mongolia	Not applied	Not applied
Philippines	1.5%	Not available

Sources: various sources – see reference <sup>xi</sup>

## **D. Monitoring and enforcement**

Monitoring and enforcement is an important responsibility of the government in order to ensure that mining operations are abiding by environmental or social requirements.

Government agencies (in their role as guardians of natural resources, mining property rights, public health and environmental quality) are responsible to ensure that mining operations are abiding by environmental and social requirements. Appropriate legal frameworks are the essential underpinning of effective monitoring and enforcement. Where clear legal frameworks are lacking, conflicts can more easily emerge between the government and the miners, further marginalizing the sector.

There is often a lack of capacity of government mining and environmental institutions that affects both the central administration as well as the provincial and local levels to monitor and enforce the ASGM sector. Furthermore, there is a heavy public management burden required by the ASGM sector. For these reasons, efforts should be made to keep enforcement processes simple.

In many cases, the designated primary authority has responsibility for mining titles and licencing as well as for coordinating on enforcement issues in order to reduce administrative burden across the administration at the various levels. In other cases, it may be more practical for the local or provincial government to monitor and enforce through mining district posts, departments, or offices. For example in Ecuador, the Government has defined the mining policy and an agency oversees the attribution and monitoring of mining titles, usually with administrative and financial autonomy.

## **V. Financing sustainable solutions**

Artisanal and small-scale mining presents many opportunities and challenges for rural development. Though economic data on ASGM is poor, it is clear that this sector could generate significant earnings in developing country economies based on official gold production reporting and that the sector has development potential, especially in rural economies. For example, the Bornuur processing plant in Mongolia (developed as part of the Sustainable Artisanal Mining (SAM) project with the Swiss Agency for Development and Cooperation (SDC)) produces gold worth US \$5 million annually. While initiatives such as the Bornuur processing plant require organization, technical assistance and education, there is a direct benefit to the national economy and the local community because the revenue is being injected directly into the local economy. These types of opportunities can only be realized when ASGM is recognized in the national economy.

With about 1 million people mining minerals and gems in Tanzania and with ASGM producing approximately 10% of its national gold supply, Tanzania incorporated ASGM issues within their national poverty reduction policy papers. This has helped Tanzania to acknowledge the importance of the sector in the national economy and to encourage support and could be used as a model for other countries.

### **A. Promoting miners access to credit**

Longer term financing for miners' operations is key for the sustainability of formalization processes and the promotion of better practices. Lack of access to formal credit markets as a result of the informal nature of the sector is a barrier to miners' implementing change. Therefore, better access to credit and financial gain should be one important outcome of formalization of ASGM.

First of all, the mining title is one tool that miners have available to them to support them in obtaining credit or loans. A process that facilitates renewal of mining titles allows mining operators to invest and continue work in an area until the deposits finishes. Licences that have a long duration help ensure stability of the exploitation because it allows miners to operate with a longer term perspective in mind. In addition, the ability to transfer mining rights and upgrade mining titles provides necessary business flexibility to miners. A title designed to have renewal options and transfer rights can be used as a tool to promote miners access to credit, ultimately supporting the promotion of better practices in extraction of mineral resources.

The most likely sources of finance for miners identified to date include: private investment, local credit mechanisms (such as microfinance schemes) and soft loans for small-medium entrepreneurs; however, little work has been done to date on the experience with these schemes in ASGM.

NGOs, governments and financial institutions should be encouraged to set up credit schemes for miners. Encouragement for these institutions to invest in the sector can be achieved by sharing data



that reflects the potential of the sector and its ability to contribute to poverty alleviation. Below is an example of lessons learned in Tanzania.

***Example: Lessons learned from experiences in Geita area, Tanzania***

*In the Geita area of Tanzania, a government revolving fund was established. The Government developed a fund through which miners can borrow money at low rates of interest. The fund was designed to revolve in accordance with repayments made by individual borrowers. This approach required the Government's Geological Survey Department to take responsibility (as part of the extension services) to carry out the evaluation of the applicant's lease area and provide a report to fund managers for decision-making. The revolving fund focused on providing smaller loans directed to specific targets. Bigger loans have been proven to be more difficult to repay.*

***For small-scale miners, small loans could include the following:***

*(i) Mine development loan – targeting the development of a mine to bring it to a stage where mining can commence;*

*(ii) Processing plant set-up loan: enabling the applicant to acquire, install and commission equipment;*

*(iii) Out of hand emergency loan: enabling the applicant to address any events that might occur that halt the project, e.g., floods, large rock falls, and other emergencies. The granting of emergency loans needs to be done in a cautious manner for limited specific circumstances as it is important that such loans do not compound existing debt issues.*

***For artisanal miners, small loans could include the following:***

*(i) Equipment loan – targeting improvement to existing equipment;*

*(ii) Mine development loan – targeting the development of a mine to bring it to a stage where mining can commence;*

*(iii) Equipment hire-purchase schemes –establishing depots through which a pool of equipment that is used by artisanal and small scale miners is available for hire or purchase.*

***Buyer Credit Schemes***

*A Buyer-Credit scheme was operated in Geita District and the surrounding areas by the Meremeta mining company. This scheme provided equipment such as pumps, compressors, drilling equipment, etc. directly to miners by gold dealers. The scheme was designed to allow gold dealers to provide direct assistance to miners through an agreement to buy the produced gold at a price that will also enable him/her to recover the costs of the equipment.*

*The Meremeta programme collapsed mainly as a result of poor quality service supplied to the miners. Nevertheless, the mechanism of the project looks feasible and may merit further development.*

The involvement of national and international development banks in the creation of credit and loan initiatives is pivotal, in particular as a means of providing a positive signal for the private sector. In addition, direct financial support from the government to any particular initiative or mining operation may occur but care should be taken to not benefit any specific ASGM group/association, company or cooperative unfairly.

Finally, it is important to avoid using credit or loans as a “donation” or “gift” because providing capital for free can create distortions and dependencies that would be difficult to correct in the future. The interest and the period of pay back of the loan needs to be appropriate to the ability to pay back.

**B. Facilitating access to markets**

For the miners to get a fair price for the gold, it is essential for them to have access to the market in order to avoid the promotion of a black market for the gold. Providing simplified access to recognized buying channels can help miners increase their income and bring the gold production into the formal economy.

Additional licences and other administrative requirements are often required in order to sell or export gold. Such requirements (e.g. certified evaluation of the gold, restrictions on quantities to be evaluated) can create security and cash flow obstacles that prevents many ASGM mining operations (including legalized ones) from selling directly into the formal economy. For example, in Mongolia the minimum quantity for evaluation is significant, at one kilogram.

As a means to support inclusion of gold sales in the formal economy, some governments choose to pay ASGM miners international market price (or above) for gold. Likewise, miners can be provided tax incentives and other deductions as another mechanism to keep the ASGM gold in the formal economy.

***Example: Facilitated Access to Markets in the Philippines***

The Philippines has developed an innovative approach to facilitate ASGM miners access to market. Miners have options to sell gold at market price through formal channels to the Philippines Central Bank (BSP) because the BSP has established gold buying stations in accessible locations. To sell, the gold has to conform to conditions defined by the Bank, in terms of physical form, maximum dimension, weight and minimum assay. While a large part of ASGM production is still sold to an intermediary to refine the gold to meet the requirements of the Bank, this is a promising initiative that facilitates the miners' access to the market and promotes the inclusion of ASGM into the formal economy of the Philippines.<sup>xiv</sup>

**C. Ethical market initiatives**

A number of ethical market initiatives have been established that aim to create an economic incentive for miners to produce gold according to a set of standards (including environmental, social and ethical standards). Some of these initiatives include Fairtrade and Fairmined Gold, the Initiative for Responsible Mining Assurance (IRMA) and the Responsible Jewellery Council (RJC). In addition to these ethical initiatives, major retailers including Cartier, Tiffany and Co., Wal-Mart, Birks and Mayors have developed specific policies to ensure that suppliers can meet recognized performance standards on environmental and human rights.

***Example: Fairtrade and Fairmined initiative***

*Peru together with other Andean countries became a leader in ethical market certification with the introduction of the "Fairtrade and Fairmined" label. This initiative demonstrates that a certification scheme can act as a tool to improve ASGM practices, in a socially and environmentally responsible way. The certification process includes requirements for proper management of toxic chemicals such as mercury and cyanide. The certification allows miners to receive a guaranteed Fairtrade Minimum Price. They also receive a Fairtrade premium payment, which is reinvested in community projects. The certification scheme encourages miners to operate in the formal economy and develop long-term business relations with their commercial partners. Miners also benefit from better working conditions, including social security and paid vacations.*<sup>xii</sup>



**Example: Innovative approach for sourcing gold**

*Cartier, the luxury jeweller and watch maker, has taken a leadership role in promoting better ASGM practices through its sourcing process. They have a unique strategy to source a portion of its gold directly from Goldlake's Eurocantera mining operation in Honduras, Central America. Goldlake's Eurocantera's mine has a partnership with artisanal miners in its local community with these miners producing more than 30 percent of the mine's total gold output. Goldlake addresses many social and environmental issues related to gold mining and has created a business model with the small-scale miners (not an 'aid' model) rewarding mercury and cyanide-free extraction processes and a zero discharge waste and water management system. Further benefits of this partnership to the local community include a reforestation program, a clinic providing free health services to Eurocantera's employees as well as the community, the creation of road infrastructure for isolated villages, training and education programs for artisanal miners on how they can operate responsibly and safely, along with access to free equipment and access to market. Although there is no independent verification of the process, the concept of this initiative marks a positive corporate social responsibility initiative and is helping to build capacity to address the issue in this particular community.<sup>xiii</sup>*

These initiatives show that the ASGM sector is able and likely to respond well when it has an opportunity and that it is possible to apply sustainable initiatives when they are appropriately designed to address the particular needs and challenges of the sector. However, the majority of these schemes are new, limited to specific sites or regions and as yet unproven.

## **VI. Concluding remarks and key messages**

The research and analysis undertaken in this report “unpacks” public policy elements and presents relevant lessons regarding policy implementation for ASGM based on the case studies developed on experiences with formalization in Ecuador, Mongolia, Peru, Tanzania and Uganda and draws upon examples from other countries. The key messages that have emerged in this synthesis are as follows:

- Formalization is the key factor enabling outreach on mercury management and other social concerns in ASGM communities; therefore, there will be substantial benefits in terms of avoided health and environment consequences from formalization policy actions.
- ASGM formalization is a multidimensional and multi-actor process that requires the integration of policies, and strong coordination between institutions and other stakeholders. Knowledge exchange among different actors (including the miners, the government, actors in the value chain of gold, civil society, and academia) will contribute to scaling up of solutions in this complex sector. Generating, disseminating and institutionalizing this knowledge is a clear and important challenge in which all stakeholders play a role.
- Successful formalization strategies tend to:
  - Incorporate simple and pragmatic approaches and implementation efforts,
  - Foster positive economic conditions for miners and local communities,
  - Address critical needs of the sector, such as improving negative environmental and social impacts, developing proper legal and environmental frameworks as well as supporting miners' access to credit and technology transfer.
- In terms of applying policy instruments to ASGM :
  - Official classification of ASGM activities allows for the simplification of legal and administrative requirements without compromising environmental and social standards. With distinct categories of mining, it becomes easier to define the corresponding appropriate mining and environmental licences with particular tenure and environmental and fiscal rights and obligations.
  - Mining titles are the main policy instrument used to control formal mining activity. These titles need to be uniquely designed for ASGM.
  - Environmental licences and plans for mine closure and rehabilitation are the necessary preconditions for any mining activity, bearing in mind the need for simplified approaches to account for varying capacities.

- Blanket bans and restrictions without accompanying support for alternatives and other mechanisms, can push artisanal and small-scale miners into non-compliance with their licences, to locations outside of the practical reach of formal monitoring and enforcement measures, or into illegal trade of toxic inputs or gold. Thus, the implementation of such restrictions should be carefully considered, and needs to be accompanied by technical and other assistance for miners to help them comply and transition.
  - Monitoring and enforcement is an important responsibility of the government in order to ensure that mining operations are abiding by environmental and social requirements. Appropriate legal frameworks are the essential underpinning to support effective monitoring and enforcement.
- Longer term financing for miners themselves is key for continuation of formalization processes; and indeed access to credit and financial gain should be one important outcome of formalization in this sector.
- Early phase implementation initiatives are required to support both one-time financing needs for early phase activities in formalization processes, including strategic planning, institution and relationship building and gathering baseline information. The key thrust for early phase financing is (1) increasing national budget allocations for ASGM activities, (2) diverting some or increasing revenues from formal (small, medium and large scale) gold mining royalties and tax receipts to assist the formalization of ASGM sector (3) encouraging large-scale – small-scale partnerships. The earliest phases of financing are likely to be sourced from public budgets at the national level.

## Endnotes

<sup>i</sup> For more information about the methodology please see the Case Studies Annex.

<sup>ii</sup> United Nations Environment Programme (UNEP), 2011. Intergovernmental negotiating committee to prepare a global legally binding instrument on mercury. Report of the intergovernmental negotiating committee to prepare a global legally binding instrument on mercury on the work of its second session. Second session, Chiba, Japan, 24–28 January 2011. UNEP(DTIE)/Hg/INC.2/20. Retrieved from :

[http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/INC2/INC2\\_20\\_report\\_e.pdf](http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/INC2/INC2_20_report_e.pdf)

<sup>iii</sup> Telmer, K. H. and Veiga, M. M. 2009. World emissions of mercury from artisanal and small scale gold mining, Springer, New York

<sup>iv</sup> <http://www.unep.org/hazardoussubstances/EnvironmentforDevelopment/tabid/56182/Default.aspx>

<sup>v</sup> International Labour Office (ILO), 1999. Social and labour issues in small scale mines: Report for discussion at the Tripartite Meeting on Social and Labour Issues in Small-Scale Mines, Geneva

Dahlberg, E.H., 1997. Report of the Expert Group Meeting, United Nations Industrial Development Organization (UNIDO). High Impact Programme: Introducing new technologies for abatement of global mercury pollution deriving from artisanal gold mining, Vienna

World Bank, 1995. Artisanal Mining Round Table: Issues for discussion. Background paper for the World Bank International Round Table on Artisanal Mining, Washington D.C.

<sup>vi</sup> Part of this and the following section is draw from the case studies, literature cited and also from the guidelines developed by the author of this report. Retrieved from :

[http://www.communitymining.org/attachments/059\\_ARM\\_Series5\\_Legalisation\\_guide\\_ASM.pdf](http://www.communitymining.org/attachments/059_ARM_Series5_Legalisation_guide_ASM.pdf)

<sup>vii</sup> United Nations Industrial Development Organization (UNIDO), 2008. Technical Guidelines on Mercury Management in Artisanal and Small-Scale Gold Mining, Vienna. Retrieved from :

<http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/ASGM/UNIDO%20Guidelines%20on%20Mercury%20Management%20April08.pdf>

<sup>viii</sup> Spiegel SJ, Veiga MM, 2010. International guidelines on mercury management in small-scale gold mining. Journal of Cleaner Production 18: 375–385.

<sup>ix</sup> Villas Boas, Roberto & Laura Barreto Eds, 2000. Cierre de Minas: Experiencias en Iberoamerica. CYTED-UNIDO, Rio de Janeiro, Veiga, Marcello, Stephen Roberts, Carlos Peiter, Glória Sirotheau, Maria Laura Barreto & Gilson Ezequiel, 2000. Filling the Void: The Changing Face of Mine Reclamation in the Americas. Department of Mining and Mineral Process Engineering, University of British Columbia, Vancouver, and CETEM - Centro de Tecnologia Mineral, Rio de Janeiro, Van Zyl, Dirk; Carlos Villachica & Jose Mogrovejo, 1997. Guia para el Cierre y Abandono de Minas. Dirección General de Asuntos Ambientales, Ministerio de Energía y Minas, Lima

<sup>x</sup> United Nations Development Programme (UNDP), 2008. *Harmonisation Of Artisanal And Small-Scaled Mining Policy, Legislative And Regulatory Frameworks In The Mano River Union Countries: A Comparative Study*, submitted by James S. Guseh, Varney A. Yengbeh, Jr., Monrovia

<sup>xi</sup> Table composed with the following references: *Economic commission for Africa (2002); Case studies produced for this document; U.S. Geological Survey Minerals Yearbooks*. <http://minerals.usgs.gov/minerals/pubs/myb.html>; Bugnosen, Edmund. *Country Case Study on Artisanal and Small-scale Mining: Philippines*. MMSD, September 2001; *Sierra Leone Tapping The Mineral Wealth for Human Progress. A Break With The Past Poverty Reduction and Economic Management. Document of the World Bank. Report No. 26141-SL. Sector Unit 4 Africa Region July 25, 2005*; Bugnosen, Edmund. *Formalisation Of The Artisanal And Small-Scale Mining Sector Of The Philippines*. CASM AGM, Sri Lanka, 2004; and *The World Bank; Agence Française de Développement; Royal Netherlands Embassy. Ghana Country Environmental Analysis. September 06, 2006. Environmentally and Socially Sustainable Development Department. (AFTSD). Africa Region. Report No: 36985-GH*

<sup>xii</sup> [www.fairgold.org](http://www.fairgold.org)

<sup>xiii</sup> [www.pactworld.org/cs/cartier](http://www.pactworld.org/cs/cartier)

<sup>xiv</sup> Department of Environment and Natural Resources Environmental Management Bureau (Philippines), 2011. National Strategic Plan for the Planned Phaseout of Mercury in Artisanal and Small-Scale Gold Mining in the Philippines, version 5